

21st.—Jackson, Oak Hill, Batavia, and Lima, Ohio; Des Moines, Iowa; Rockford, Ind.; Parkersburg, W. Va.

20th–22d.—Cumberland, Md.; Clarksburg, Piedmont, and Buckhannon, W. Va.; Womelsdorf, Pa.

22d.—Fort Wayne, Ind.; Findlay, Ohio (8.45 a. m. until noon).

21st–23d.—Muncie, Ind.; Springfield, Grafton, Caldwell, Zanesville, Dayton, Marietta, Portsmouth, Shawnee, London, and Newark, Ohio; Richmond, Ky.; Pittsburg, Pa.; Sisterville, Charleston, and Parkersburg, W. Va.

23d.—Ashland, Ky. (2.45 p. m. violent storm of rain passed 19 miles west of Ashland and 2 miles east of Denton).

23d–24th.—Somerset (rainfall 6 inches), Stockport (eight inches), South Charleston, Springfield (23d, 10 p. m., cloudburst), Enon, Osborne, Cold Springs, Durboin, Eagle City, Tremont City, Shattuck, Lima, Tadmire, Fremont, Findlay, Lancaster, Caldwell (23d, 11 p. m., to 24th, 8 a. m.), Zanesville, Dayton, Grove City, London, Newark, and Shawnee, all in Ohio.

24th.—Morrison and Golden, Colo., and Bear Creek and Mount Vernon canyons, near Denver. This storm apparently extended from Boulder to near Pueblo; rained hard in Pueblo all day, beginning at 4 p. m., and very severe after 7; Warsaw and Arcola, Ill.; Terre Haute, Ind. (minor tornado at 3 a. m.); flood in the Monongahela, the worst for twenty-five years; Wheeling, W. Va. (2 a. m., to 2 p. m., heavy rain for the second time within three days); Gallipolis, Ohio (20–24th, rain every day and night for five days); Shawnee, Ohio (24th a. m., very hard rain and wind, the hardest ever known); New Lexington, Ohio (23d, 11 p. m., to 24th, 7 a. m.); Harrisburg, Ohio (23d, 9 p. m., to 24th, 6 a. m.); Marietta and Zanesville, Ohio (23d–24th, heaviest rains ever known); Beverly, W. Va.

25th.—Braddock, Pa., 4.45 p. m. heavy rain began; Port Perry, Pa. (heavy rain in the valley of the Monongahela, 70 miles above this place, and great flood here).

26th.—Dubuque, Iowa, worst storm on record; a rain in the morning, another in the afternoon, and a violent storm of wind and rain in the evening; the neighboring country generally flooded, with loss of bridges and crops.

26–27th.—Delaware, Ohio, heavy rain last night; the farmers say that the excess of rain this year is more disastrous than the drought of 1895.

27th.—Port Perry, Pa. (very violent); McKeesport, Pa., 4

p. m. (heavy rain, great damage); Homestead, Pa. (heavy rain began with strong wind between 4 and 5 p. m.; raining heavily until 10 p. m.); Elkhorn, Pa. (no storm on the 25th, but very heavy between 9 p. m. and midnight July 27th; terrible rain).

27–28th.—Pittsburg and Alleghany counties, and Cecil, Washington Co.; West Newton, Buena Vista, Perryopolis, Uniontown, Westmoreland, Grove City, Beaverfalls, Brownsville, Philipsburg, Jeannette, Indiana Co., Bellefonte, Irwin, Washington, McDonnell, Mount Pleasant, all in Pennsylvania (severe wind and rain, sometimes described as a cloudburst).

28th.—Frankfort, 10 p. m., 27th to 7 a. m., 28th; Elwood, Fowler, Newcastle, and Anderson, violent rain and hail during the night (six inches of rain supposed to have fallen); Tipton, Frankton, Noblesville, Bluffton (one hail-stone weighed one pound and seven ounces); Crawfordsville, Arcadia, Muncie (frightful wind); Montpelier (hailstones 17 inches in circumference); Rushville (4.40 p. m. rain and hail); Cicero, Lebanon, Lafayette, Terre Haute, (hailstorm, 4 p. m.); Kokomo; all in Indiana.

29th.—Chillicothe, Ohio; Glouster, Athens Co., Ohio (8 p. m., destructive gales from northwest and southwest, possibly a tornado and rain); Columbus, Ohio (small tornado 29th, p. m.); Circleville, Ohio; South Charleston and Germantown, Ohio (destructive wind); Blendon, Franklin Co., Ohio (7.30 p. m., violent wind and rain); Pleasantville, Ohio (8 p. m., tornado); Mentone, Ind. (tornado, 3 p. m.); Portland, Ind. Uniondale, Ind. (destructive wind); Bluffton, Ind. (destructive wind); Geneva, Ind., destructive wind.

30th.—Salem (two storms, early a. m. and noon); Portsmouth, Ohio, and the Scioto Valley (p. m.); Steubenville, Ohio (2.15 to 2.50 p. m. cloudburst, $3\frac{1}{2}$ inches); Stockport, Ohio (violent wind and rain); Briggsdale, Ohio (most violent wind and rain); East Liverpool, Ohio (2.30 p. m., cloudburst); Alliance, Ohio (noon and 2 p. m. two heavy thunderstorms); Portsmouth, Ohio (29–30th fierce storm); 5 miles north of Delaware, Ohio (cloudburst); Jackson, Ohio (29–30th, heavy rain and wind); Harrisburg, Ohio (29–30th windstorm at night); Pickerington, Ohio (incipient tornado, at night 29–30th); Delaware, Ohio (6 p. m., small cloudburst); Glenville, W. Va.

31st.—Martins Ferry, Ohio (began 4 a. m., lasted thirty minutes).

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective services.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 80.9°, or 3.0° below normal; the highest was 105°, at Asheville on the 29th and 30th and Tuscaloosa on the 31st, and the lowest, 50°, at Madison on the 9th. The average precipitation was 5.06, or 0.66 above normal; the greatest monthly amount, 12.57, occurred at Newton, and the least, 105, at Uniontown.

Arizona.—The mean temperature was 83.3°, or 3.3° above normal; the highest was 120°, at Texas Hill and Fort Mohave on the 14th, and the lowest, 45°, at Flagstaff on the 27th and 29th. The average precipitation was 3.10, or 1.90 above normal; the greatest monthly amount, 6.92, occurred at Walnut Ranch, and the least, "trace," at Parker.

Arkansas.—The mean temperature was 83.5°, or 3.3° above normal, the highest July mean during the past fourteen years; the highest was 110° at Malvern, on the 31st, and the lowest 52°, at Silver Springs on the 9th. The average precipitation was 1.61, or 2.30 below normal; the greatest monthly amount, 7.50, occurred at Corning; Elon reported no rain. The drought that prevailed over all but a small area in the north-east part of the State, together with the very high temperature and hot

drying winds, did irreparable injury to all growing crops. Cotton, which at the beginning of the month never showed a better prospect for a very large yield, had, through shedding and premature opening of bolls, so deteriorated that at the end of the month there was but a very poor crop in sight. Corn was seriously injured and almost a total failure in many localities. The hay crop is short, pastures drying up, and stock water very scarce. The "oldest inhabitants" report the drought the most severe since 1874.

California.—The mean temperature was 76.6°, or 3.5° above normal; the highest was 124°, at Volcano Springs on the 12th, and the lowest, 27°, at Quincy on the 28th. The average precipitation was 0.09, or 0.04 above normal; the greatest monthly amount, 2.57, occurred at Isabella; numerous places reported no rainfall.

Colorado.—The mean temperature was slightly above normal; the highest was 104°, at Minneapolis on the 22d, and Lamar on the 29th, and the lowest, 28°, at Gunnison on the 21st. The average precipitation was 2.32, or 0.05 below normal; the greatest monthly amount, 5.00, occurred at Lake Moraine, and the least, 0.07, at Vilas.

Florida.—The mean temperature was 81.4°, or 1.2° below normal; the highest was 103°, at McClenny on the 30th, and the lowest, 57°, at Tallahassee on the 7th. The average precipitation was 8.18, or 1.36 above normal. The greatest monthly amount, 19.97, occurred at Milton, and the least, 2.43, at Merritts Island. The hurricane that swept the western portion of the State on the 7th was one of the severest in the his-

tory of the service, and did incalculable damage to the various crops of the extreme western counties. The damage was particularly great in Escambia County. Cotton and corn were prostrated, and nearly all fruit was ruined. The heavy rainfall, in conjunction with the wind, made conditions worse, and many fields were badly washed.

Georgia.—The mean temperature was 80.0°, which is normal; the highest was 105°, at Millen on the 30th, and the lowest, 49°, at Diamond on the 15th. The average precipitation was 8.26, or 3.10 above normal; the greatest monthly amount, 13.10, occurred at Toccoa, and the least, 2.44, at Millen.

Idaho.—The mean temperature was 71.0°; the highest was 107°, at Payette and Pollock on the 5th, and the lowest, 31°, at Chesterfield on the 24th. The average precipitation was 0.73; the greatest monthly amount, 1.86, occurred at Idaho City, while no rain fell at Minidoka.

Illinois.—The mean temperature was 75.2°, or 0.7° below normal; the highest was 106°, at Mascoutah, and the lowest, 39°, at Chemung. The average precipitation was 6.35, or 3.34 above normal; the greatest monthly amount, 12.14, occurred at Atwood, and the least, 2.20, at Herrin.

Indiana.—The mean temperature was 75.0°, or 0.4° above normal; the highest was 100°, at Angola on the 3d, Evansville and Huntington on the 30th, and Vincennes on the 27th and 29th, and the lowest, 42°, at Hammond on the 16th. The average precipitation was 7.61, or 4.27 above normal; the greatest monthly amount, 12.78, occurred at Angola, and the least, 2.88, at Huntington.

Iowa.—The mean temperature was 73.6°, or 0.5° below normal; the highest was 104°, at Malvern on the 3d, and the lowest, 42°, at Elkader and Mason City on the 7th, 9th, and 17th. The average precipitation was 6.90, or 2.60 above normal; the greatest monthly amount, 12.67, occurred at Moosau, and the least, 1.61, at Rock Rapids.

Kansas.—The mean temperature was 78.1°, or 0.5° above normal; the highest was 108°, at Winfield on the 30th, and the lowest, 48°, at New England Ranch on the 23d. The average precipitation was 4.75, or 1.25 above normal; the greatest monthly amount, 10.96, occurred at Wakefield, and the least, 0.90, at Morton and Tribune.

Kentucky.—The mean temperature was 77.4°, or 1.1° above normal; the highest was 103°, at Sandy Hook on the 1st, and at Paducah on the 30th, and the lowest, 47°, at Maysville on the 1st. The average precipitation was 7.44, or 3.06 above normal; the greatest monthly amount, 13.01, occurred at Louisville, and the least, 2.76, at Princeton.

Louisiana.—The mean temperature was 83.2°, or 1.7° above normal; the highest was 109°, at Liberty Hill and Oakridge on the 31st, and the lowest, 53°, at Amite and Davis on the 9th. The average precipitation was 2.36, or 3.46 below normal; the greatest monthly amount, 7.76, occurred at Cameron, while no rain fell at Lake Providence, Minden, and Monroe. The month was the driest July on record since State observations began. The lack of rainfall in the northern parishes was disastrous to all vegetation, and, combined with the extreme heat of the latter part of the month, served to burn up pastures and work material harm to the cotton and corn crops, causing the former to shed and open prematurely, and the latter to wilt.

Maryland.—The mean temperature was 76.0°, or 0.9° above normal; the highest was 99°, at Western Port on the 13th, and Wilmington, Del., on the 29th, and the lowest, 40°, at Deer Park and Sunnyside on the 17th. The average precipitation was 5.22, or 1.45 above normal; the greatest monthly amount, 15.27, occurred at Sunnyside, and the least, 2.34, at Easton.

Michigan.—The mean temperature was 69.1°, or 0.2° below normal; the highest was 98°, at Baraga, on the 1st, and at Port Austin, Fitchburg, and Adrian on the 2d; the lowest was 32°, at Powers on the 17th. The average precipitation was 3.47, or 1.38 above normal; the greatest monthly amount, 8.88, occurred at Hanover, and the least, 0.60, at Northport.

Minnesota.—The mean temperature was 69.9°; the highest was 100°, at Lesueur, Granite, and Glenwood on the 12th, and at Bingham Lake on the 14th, and the lowest, 36°, at Breese on the 23d. The average precipitation was 1.88; the greatest monthly amount, 4.39, occurred at Mount Iron, and the least, 0.33, at Cambridge.

Mississippi.—The mean temperature was 82.9°, or 1.6° above normal; the highest was 106°, at Columbus on the 28th, and the lowest, 50°, at Corinth on the 9th. The average precipitation was 2.19, or 1.65 below normal; the greatest monthly amount, 6.55, occurred at Leakesville, and the least, 0.16, at Austin. At many places in the western portion the fall was equally as light as that at Austin, and the severe drought which was almost universal in that section injured cotton and corn and all minor crops which promised well at the beginning of the month. Cotton began to open prematurely and cotton picking was the earliest of record, the "first bale" was received at Vicksburg on the 22d.

Missouri.—The mean temperature was 77.2°, or 0.1° above normal; the highest was 108°, at Grovedale on the 31st, and the lowest, 48°, at Houston on the 8th, and at Potosi and Mount Vernon on the 9th. The average precipitation was 5.75, or 1.84 above normal; the greatest monthly amount, 14.98, occurred at Downing, and the least, 1.51, at Mineral Spring.

Montana.—The mean temperature was 68.0°, or about normal; the highest was 111°, at Musselshell on the 9th, and the lowest, 30°, at

Marysville on the 21st. The average precipitation was 1.26, or 0.56 above normal; the greatest monthly amount, 4.95, occurred at Fort Custer, and the least, "trace," at Troy.

Nebraska.—The mean temperature was 74.3°, or 0.5° below normal; the highest was 109°, at Norman on the 26th, and the lowest, 44°, at Lexington on the 10th. The average precipitation was 3.87, or 0.36 above normal; the greatest monthly amount, 9.52, occurred at Odell, and the least, 0.53, at Culbertson.

New England.—The mean temperature was 70.0°, or 0.8° above normal; the highest was 96°, at Lewiston, Me., and North Conway, N. H., on the 2d, and the lowest, 39°, at West Milan, N. H., on the 24th. The average precipitation was 3.66, or 0.06 below normal; the greatest monthly amount, 6.67, occurred at Falls Village, Conn., and the least, 1.34, at Providence, R. I.

New Jersey.—The mean temperature was 75.0°, or 0.5° above normal; the highest was 98°, at Millville on the 29th, and the lowest, 47°, at Charlotteburg on the 1st and 26th. The average precipitation was 5.50, or 1.18 above normal; the greatest monthly amount, 13.29, occurred at Belvidere, and the least, 2.45, at Camden.

New Mexico.—The mean temperature was slightly below normal; the highest was 104°, at Rincon on the 8th, and the lowest, 34°, at La Belle on the 10th. The precipitation was abundant; the greatest monthly amount, 8.77, occurred at Winsors Ranch, and the least, 0.73, at Olio.

New York.—The mean temperature was 70.7°, or 0.7° above normal; the highest was 95°, at Avon on the 2d, and Middletown and Plattsburg Barracks on the 3d, and the lowest, 40°, at Friendship on the 17th and 18th, and Saranac Lake on the 31st. The average precipitation was 4.85, or 1.19 above normal; the greatest monthly amount, 8.71, occurred at Port Jervis, and the least, 2.43, at North Hammond.

North Carolina.—The mean temperature was 77.4°, or 0.2° below normal; the highest was 103°, at Tarboro on the 30th, and the lowest, 44°, at Highlands on the 9th. The average precipitation was 8.19, or 2.67 above normal; the greatest monthly amount, 13.77, occurred at Flat Rock, and the least, 3.23, at Selma. July was remarkable for its excessive rains and the great heat during the latter part. The average precipitation for the month, 8.19, is the highest on record for North Carolina during twenty-five years. The heaviest rains occurred on the 7th and 8th, and some of the amounts were very large. A rapid rise occurred in the streams over the entire State with an enormous amount of damage to lowland crops, especially corn.

North Dakota.—The mean temperature was 67.5°, or 1.1° below normal; the highest was 107°, at Medora on the 11th, and the lowest, 31°, at Dickinson on the 27th. The average precipitation was 1.59, or 1.27 below normal; the greatest monthly amount, 4.78, occurred at Wahpeton, and the least, 0.47, at Minto.

Ohio.—The mean temperature was 73.2°, or 0.3 above normal; the highest was 102°, at Warsaw on the 27th, and the lowest 40°, at Annapolis on the 17th. The average precipitation was 8.11 (the wettest month on record), or 4.63 above normal; the greatest monthly amount, 16.13, occurred at Demos, and the least, 3.60, at Orangeville. The continued wet weather, storms, and floods proved very damaging to crops on lowlands. Oats and wheat in stack and shock were seriously injured by too much rain.

Oklahoma.—The mean temperature was 82.0°; the highest was 109°, at Anadarko on the 24th, and the lowest, 54°, at Beaver on the 4th. The average precipitation was 2.96; the greatest monthly amount, 6.14, occurred at Winnview, and the least, 0.35, at Tahlequah.

Pennsylvania.—The mean temperature was 72.8°, or 1.7° above normal; the highest was 98°, at Aqueduct on the 13th, and the lowest, 40°, at Smethport and Shinglehouse on the 17th, and Confluence on the 21st. The average precipitation was 6.89, or 2.59 above normal; the greatest monthly amount, 15.59, occurred at Lyncippus, and the least, 3.04, at Coatesville.

South Carolina.—The mean temperature was 80.7°, or 0.9° above normal; the highest was 105°, at Gillisonville and Shaws Forks on the 31st, and the lowest, 51°, at Walhalla on the 8th. The average precipitation was 8.17, or 2.15 above normal; the greatest monthly amount, 15.72, occurred at Greenwood, and the least, 3.42, at St. Stephens.

South Dakota.—The mean temperature was 71.0°, or about normal; the highest was 108°, at Forest City on the 2d, and the lowest, 35°, at Parkston on the 8th, 16th, 24th, and 25th. The average precipitation was 2.80, or 0.16 below normal; the greatest monthly amount, 6.82, occurred at Shiloh, and the least, 0.14, at Nowlin.

Texas.—The temperature on an average for the State was 0.2° below the normal. There was a general deficiency over central and west Texas, the Panhandle, and the western portion of north Texas, and along the coast, which ranged from 1.0° to 4.0°, with the greatest deficit in the vicinity of El Paso. Over the other portions of the state there was a general excess, ranging from 0.3° to 0.8° over east and southwest Texas, and from 1.1° to 2.5° over the eastern portion of north Texas, with the greatest in the vicinity of Paris. The maximum was 108°, at Camp Eagle Pass on the 4th; minimum, 52°, at Sierra Blanca on the 6th. The average precipitation for the State was 0.02 below the normal. There was a general excess over the Panhandle, west and southwest Texas, and the coast district, with the greatest more than 4.0 in the vicinity of Amarillo. Over the other portions of the State there

was a general deficiency, ranging from 0.2 to 0.92 over central and east Texas, and from 0.26 to 1.40 over north Texas, with the greatest in the vicinity of Paris. The greatest monthly precipitation was 7.23 at Stafford.

Utah.—The mean temperature was 72.0°, or about 1.0° below normal; the highest was 111°, at St. George on the 11th, and the lowest, 33°, at Soldier Summit on the 1st. The average precipitation was 1.81; the greatest monthly amount, 3.85, occurred at Koosharem, and the least, 0.12, at Cisco.

Virginia.—The mean temperature was 76.3°, or about normal; the highest was 102°, at Bonair on the 28th, and the lowest, 42°, at Blacksburg on the 8th. The average precipitation was 6.99, or 3.38 above normal; the greatest monthly amount, 11.23, occurred at Spottsville, and the least, 3.35, at Birdsnest.

Washington.—The mean temperature was 68.2°, or 3.3° above normal; the highest was 112°, at Bridgeport, Fort Simcoe, and Connell, and the lowest, 37°, at Blaine on the 29th, and Hunters on the 22d. The average precipitation was 0.06, or 0.50 below normal; the greatest monthly amount, 0.60, occurred at Rosalia; no rain fell at more than half of the stations. The chief characteristic of the month of July, 1896, was the general absence of precipitation. Seldom, if ever, has there been such a protracted drought in the eastern section, and in the western section there has been but one like it since the settlement of the country; that was in 1883. This year, at 80 per cent of the stations no rain at all fell, or only the slightest trace. The drought begun in June, there having been scarcely any rain after the 9th. In the eastern section of the State there were a few scattered thunderstorms during the month of July.

West Virginia.—The mean temperature was 73.2°, or about 2.0° below normal; the highest was 97°, at Hewett on the 29th, and the low-

est, 46°, at Beckly on the 10th, and Bloomery on the 18th. The average rainfall was 9.07, or nearly 5.0 above normal; the greatest monthly amounts were 15.70, at Phillippi; 15.60, at Beverly; 15.15, at Weston, and 15.09, at New Martinsville. The least amount was 2.91 at Green Sulphur Springs. Exceedingly heavy rains occurred in the northern-central and Ohio Valley counties, and in other sections the rainfall was considerably above the normal. The rivers of the northern part of the State were flooded to a height greater than ever before known at this period of the year, and very great damage was done to crops and property along their courses and on lowlands. In many localities the crops were totally destroyed, and in all sections were more or less injured by the wet weather. These storms were generally electrical, and in some cases exhibited tornadic tendencies. The observer at Beverly reports the occurrence, on the 24th, of the most disastrous storm that ever visited that valley, and at Glenville, on the 30th, a storm occurred which was said to have been the severest ever known in that locality, and which exhibited the character of a tornado. The heaviest of these storms occurred from the 13th to 16th, the 21st to 25th, and on the 28th and 30th.

Wisconsin.—The mean temperature was 69.8°, or less than 1.0° below normal; the highest was 100°, at Medford on the 3d and Osceola Mills on the 12th, and the lowest, 34°, at Antigo on the 16th. The average precipitation was 3.15, or slightly less than normal; the greatest monthly amount, 8.30, occurred at Delevan, and the least, 0.7, at Pepin.

Wyoming.—The mean temperature was 68.0°, or about normal; the highest was 102°, at Lusk on the 13th, and the lowest, 32°, at Wheatland on the 14th. The average precipitation was 2.04, being decidedly above normal; the greatest monthly amount, 6.35, occurred at Cheyenne, and the least, 0.52, at Wheatland.

SPECIAL CONTRIBUTIONS.

KITES IN MONTANA.

By Mr. A. B. COE.

From recent letters received from Mr. R. M. Crawford, director of the Montana section of the Climate and Crop Service, and from Mr. A. B. Coe, voluntary observer at Kipp, Montana (N. 48° 45', W. 112° 45', elevation about 4,000 feet), we take the following notes, and hope that others may be led to pursue similar studies with the same enthusiasm. Mr. Coe says:

I herewith transmit an account of a little experiment tried recently, employing a cellular kite of the dimensions described in the November, 1895, WEATHER REVIEW for the purpose, and my maximum thermometer.

A phase of our climate at this station is the frequent veering of the wind from westerly points to north or northeast, accompanied by an extremely rapid fall of temperature, and usually more or less precipitation.

I have often thought that these cold waves did not reach very high up, and that at no great height above them the warm southwest wind still prevailed. For several days prior to July 29, 1896, my maximum had been climbing up into the nineties too frequently for comfort. The air was dense with smoke, when the wind suddenly veered to the northeast, blowing steadily at about 15 or 20 miles an hour, and pretty thoroughly clearing the atmosphere of smoke. The temperature fell 51° in the next twenty-four hours, and on the 21st the clouds were dragging on the ground, and precipitating both rain and snow. At 11.30 a. m., on that date, my minimum thermometer registered 32°, but only for about twenty minutes, when it rose to 38°. From occasional glimpses of the sun obtained through breaks in the clouds, and from its red appearance, it was evident that there was another current of air full of smoke at a low altitude, blowing from the west, and undisturbed by the cold wave from the northeast beneath it.

The time and circumstances seemed propitious to test my theory, so I climbed to the top of a hill near my home, which I found by triangulation to be about 200 feet above my usual place of observation. Thither I bore my tailless kite, maximum thermometer, and 4,800 feet of No. 24 twine, tagged at every 100 feet for convenience in computing elevation. I secured the thermometer firmly in a pasteboard tube, open at both ends, and fastened this to my kite with wire. At 1.15 p. m. the surface temperature was 38°, when with the help of an assistant I soon had both kite and instrument mounting steadily upward on a flight of exploration.

I will have to add right here, that my kite is a "stayer," and the only one of any description I ever made that would fly. I let it run out 1,000 feet, and on drawing it in found that there was no difference in its registration. Again I let it out, and it was not until 3,900 feet of twine had unreeled that any change in its action was observed; then

I noticed that the kite above the fog and clouds was pulling nearly northeast, instead of southwest, as at first. Upon pulling it in, during which operation it again assumed its strain to the southwest, I was overjoyed to discover that the register stood at 77°, while at the point where I stood it remained at 39°. Being anxious to make sure that there was no mistake, I sent the instrument up again, and obtained a like result at about the same altitude, the kite going through the same movements as at first; but whether my observation is of any value aside from the personal satisfaction derived, is a question.

I anticipate some interesting experiments this coming winter in this direction, to determine, if possible, at what elevation the warm winds locally termed "chinooks" blow, at times when their influence is felt many miles east of this point, while remaining intensely cold here.

In response to a request for further data as to the protection of his thermometer and other matters, Mr. Coe writes:

I employed a strong pasteboard tube 12 inches in length, and 1½ inch in diameter for the purpose. In this I sewed my maximum thermometer securely with strong pack thread, and packed fine cotton around each end for the better protection of the tube. Directly over the tube I cut a slit ¼ by 8 inches, so that the scale could be readily seen without removing the instrument. Four feet from the belly band I secured the tube to the twine with fine wire. The wind was blowing a good stiff breeze at the time, probably 20 miles an hour, and from the time the kite was let go until pulled in 23 and 25 minutes, respectively, elapsed, and the difference in temperature at each trial was the same as stated. My kite rose and descended very steadily without diving or pitching, so that I could not well believe that the difference in temperature was caused by any condition other than an upper current of warm air, blowing from the southwest at that altitude. The clouds near the earth were very dense, while from another experiment tried at the same time, I am satisfied that the kite passed through the clouds into bright sunshine. I secured a strip of sensitized paper between two thin pieces of mica, and sent it up attached to the kite, and exposed a similar piece to the light on the ground, in a like manner to protect the paper from dampness. While the paper at my feet remained unchanged in color to any extent the piece sent up was changed to a bronze black.

SUNSHINE AT THE SOUTHERN CALIFORNIA AGRICULTURAL EXPERIMENT FARM, NEAR POMONA, CAL.

By Mr. A. J. HENRY.

The percentages of sunshine for the six months, January to June, 1896, at the Southern California Agricultural Experiment Farm are given in the table below. The data are published as compiled in the Records Division of the Weather Bureau, from the original photographic sheets made under the direction of Mr. J. W. Mills, foreman of the experiment